

Give answers to systems of equations as ordered pairs.

For 1-13 solve each system of equations by graphing. Write *No Solution* and *Many Solutions* where appropriate.

1. $y = -3x + 2$
 $y = 2x - 3$

2. $y = \frac{1}{2}x$
 $y = -\frac{3}{2}x + 8$

3. $y = 2x + 2$
 $y = -\frac{1}{2}x - 8$

4. $y = -\frac{1}{3}x$
 $4x - 12y = -24$

5. $y = -3x + 4$
 $12x + 4y = 24$

6. $y = -3x + 7$
 $10x + 10y = 50$

7. $y = -x - 2$
 $4x - 2y = 16$

8. $y = -6$
 $-18x + 9y = -18$

9. $x = 4$
 $24x - 48y = 144$

10. $y = 2x - 8$
 $10x - 5y = 40$

11. $10x + 20y = 80$
 $5x - 10y = 20$

12. $4x + 4y = -28$
 $12x - 6y = -48$

13. $-8x + 4y = 16$
 $6x + 6y = 6$

For 14 to 20, without graphing tell if each system of equations has, NO SOLUTION, ONE SOLUTION, or MANY SOLUTIONS.

14. $y = 5x - 9$
 $y = -9x + 1$

15. $y = 2x + 3$
 $y = -\frac{1}{2}x + 7$

16. $y = 6x - 1$
 $y = 6x + 11$

17. $y = 4x + 10$
 $y = x + 10$

18. $y = 3x - 8$
 $24x - 8y = 64$

19. $y = 2x + 3$
 $2x - 4y = 12$

20. $y = -6x + 3$
 $12x + 2y = 4$

For 21-30, solve each system of equations by substitution.

21. $y = 6x - 13$
 $y = -2x + 19$

22. $y = -x - 5$
 $y = 3x + 27$

23. $y = \frac{1}{2}x - 3$
 $y = -7x + 42$

24. $y = -x + 12$
 $y = -3x + 36$

25. $y = 2x - 7$
 $4x + y = 29$

26. $y = 4x - 5$
 $2x + 7y = -65$

27. $y = -3x + 71$
 $6x + 3y = 168$

28. $y = -x + 5$
 $5x + 2y = -11$

29. $x + y = 12$
 $3x + 4y = 41$

30. $x + y = 8$
 $8x + 12y = 93$

For 31 to 38, solve each system of equations by using elimination.

31. $4x + 3y = 25$
 $6x - 3y = 15$

32. $9x - 5y = -26$
 $2x - 5y = -33$

33. $m + 8n = 36$
 $-4m + 3n = -4$

34. $3x - 2y = -11$
 $11x - 4y = -17$

35. $10j - 5k = 20$
 $3j + 8k = -13$

36. $7A + 4B = 19$
 $-9A + 3B = 57$

37. $6x + 12y = 30$
 $9x + 18y = 45$

38. $3x + 9y = 45$
 $4x + 12y = -48$

39 to 44 is on the back.

39. This past weekend you and some of your neighbors went to an amusement park. Four adults and six children cost \$294. The following weekend you went again with some of your relatives. Three adults and five children cost \$233. Write and solve a system of equations to find the price of an adult admission and the price of a child's admission.

40. Suppose you invest \$2500 for equipment to print designs on T-shirts that you will then sell. Each blank T-shirt will cost you \$3. After you've printed the design on the shirt you will sell them for \$20 each. How many shirts must you sell in order to break even?

41. On your shelf you have two kinds of drinks, Grape which is 8% sugar and Lime wick is 16% sugar. You want to mix these together to make 20 gallons of a drink that has 10% sugar. Find the number of gallons of each kind of drink that you must mix together to create 20 gallons of drink with 10% sugar.

42. In the morning you take off and fly for 6 hours into a headwind (against the wind) and travel 960 miles. After lunch you fly back with a tailwind (with the wind) for 4 hours and travel 800 miles). Write and solve a system of equations to find the speed of the plane and the speed of the wind.

Graph each system of inequalities. Shade the solution region with either a colored pencil or a highlighter.

43.

$$y < \frac{1}{3}x - 1$$

$$4x + 8y > -24$$

44.

$$y \geq -\frac{1}{2}x + 2$$

$$10x - 4y \leq 20$$